

- 321 **Vigilance in Cattle: The Influence of Predation, Social Interactions, and Environmental Factors** by Bryan M. Kluever, Stewart W. Breck, Larry D. Howery, Paul R. Krausman, and David L. Bergman
- 329 **Water Balance of a Stock-Watering Pond in the Flint Hills of Kansas** by J. L. Duesterhaus, J. M. Ham, C. E. Owensby, and J. T. Murphy
- 339 **A Direct Approach for Quantifying Stream Shading** by Patrick E. Clark, Douglas E. Johnson, and Stuart P. Hardegree
- 346 **Evaluation of NEXRAD Radar Precipitation Products for Natural Resource Applications** by Stuart P. Hardegree, Steven S. Van Vactor, David H. Levinson, and Adam H. Winstral

#### Research Note

- 354 **Intake of Water Containing Condensed Tannin by Cattle and Sheep** by Scott L. Kronberg

#### JULY 2008

#### Forum

- 359 **Recommendations for Development of Resilience-Based State-and-Transition Models** by D. D. Briske, B. T. Bestelmeyer, T. K. Stringham, and P. L. Shaver

#### Research Papers

- 368 **Short- and Long-Term Vegetation Change Related to Grazing Systems, Precipitation, and Mesquite Cover** by Fadzayi E. Mashiri, Mitchel P. McClaran, and Jeffrey S. Fehmi
- 380 **Paddock Size and Stocking Density Affect Spatial Heterogeneity of Grazing** by Matthew K. Barnes, Brien E. Norton, Motoko Maeno, and John C. Malechek
- 389 **Interspace/Undercanopy Foraging Patterns of Beef Cattle in Sagebrush Habitats** by Kevin A. France, Dave C. Ganskopp, and Chad S. Boyd
- 394 **Piñon-Juniper Woodland Use by Cattle in Relation to Weather and Animal Reproductive State** by Christina M. Black Rubio, Andrés F. Cibils, Rachel L. Endecott, Mark K. Petersen, and Kenneth G. Boykin
- 405 ***Sphaeralcea angustifolia* as a Substitute for Alfalfa for Growing Goats** by Miguel Mellado, Gabriela Salas, and Wolfgang Pittroff
- 412 **Assessment of Juniper Encroachment With the Use of Satellite Imagery and Geospatial Data** by Temuulen Tsagaan Sankey and Matthew J. Germino
- 419 **Precision, Repeatability, and Efficiency of Two Canopy-Cover Estimate Methods in Northern Great Plains Vegetation** by Amy J. Symstad, Cody L. Wienk, and Andy D. Thorstenson
- 430 **Factors Affecting *Bromus tectorum* Seed Bank Carryover in Western Utah** by Duane C. Smith, Susan E. Meyer, and V. J. Anderson
- 437 **Leafy Spurge Suppression by Flea Beetles in the Little Missouri Drainage Basin, USA** by Luke W. Samuel, Donald R. Kirby, Jack E. Norland, and Gerald L. Anderson
- 444 **Physiological and Morphological Characterization of Basalt Milkvetch (*Astragalus filipes*): Basis for Plant Improvement** by Kishor Bhattarai, Douglas A. Johnson, Thomas A. Jones, Kevin J. Connors, and Dale R. Gardner
- 456 **Perceptions of Texas Landowners Regarding Fire and Its Use** by Urs P. Kreuter, J. Brad Woodard, Charles A. Taylor, and W. Richard Teague

#### SEPTEMBER 2008

#### Research Papers

- 465 **Carbon Fluxes on North American Rangelands** by Tony Svejcar, Raymond Angell, Jim Bradford, William Dugas, William Emmerich, Albert B. Frank, Tagir Gilmanov, Marshall Haferkamp, Douglas A. Johnson, Herman Mayeux, Pat Mielnick, Jack Morgan, Nicanor Z. Saliendra, Gerald E. Schuman, Phillip L. Sims, and Kereith Snyder
- 475 **Effects of Nitrogen Availability and Cheatgrass Competition on the Establishment of Vavilov Siberian Wheatgrass** by Monica B. Mazzola, Kimberly G. Alcock, Jeanne C. Chambers, Robert R. Blank, Eugene W. Schupp, Paul S. Doescher, and Robert S. Nowak

- 485 **Effects of Slash on Herbaceous Communities in Pinyon-Juniper Woodlands of Northern Arizona** by Michael T. Stoddard, David W. Huffman, Thom M. Alcoze, and Peter Z. Fule
- 496 **Interannual Herbaceous Biomass Response to Increasing Honey Mesquite Cover on Two Soils** by W. Richard Teague, R. Jim Ansley, William E. Pinchak, Steven L. Dowhower, Shannon A. Gerrard, and J. Alan Waggoner
- 509 **Long-Term Response Patterns of Tallgrass Prairie to Frequent Summer Burning** by E. Gene Towne and Ken E. Kemp
- 521 **Microchannels Affect Runoff and Sediment Yield From a Shortgrass Prairie** by Selina A. Koler, G. W. Frasier, M. J. Trlica, and J. D. Reeder
- 529 **Combined Impacts of Native Grass Competition and Introduced Weevil Herbivory on Canada Thistle (*Cirsium arvense*)** by Angel Ferrero-Serrano, Timothy R. Collier, Ann L. Hild, Brian A. Mealor, and Thomas Smith
- 535 **Temporal Variation in Diet and Nutrition of Preincubating Greater Sage-Grouse** by Michael A. Gregg, Jenny K. Barnett, and John A. Crawford
- 543 **Does Doramectin Use on Cattle Indirectly Affect the Endangered Burrowing Owl?** by Kevin D. Floate, Patrice Bouchard, Geoff Holroyd, Ray Poulin, and Troy I. Wellcome
- 554 **Jaguar and Puma Predation on Cattle Calves in Northeastern Sonora, Mexico** by Octavio C. Rosas-Rosas, Louis C. Bender, and Raul Valdez

#### Research Notes

- 561 **Common Broomweed Growth Characteristics in Cleared and Woody Landscapes** by Roy L. Stanford, R. James Ansley, and Dean Ransom, Jr.
- 566 **Short-Term Mesquite Pod Consumption by Goats Does Not Induce Toxicity** by Robert W. Cook, Cody B. Scott, and F. Steve Hartmann

#### NOVEMBER 2008

#### Research Papers

- 571 **Fire History in a Chaparral Ecosystem: Implications for Conservation of a Native Ungulate** by Vernon C. Bleich, Heather E. Johnson, Stephen A. Holl, Lora Konde, Steven G. Torres, and Paul R. Krausman
- 580 **Plant Community and Soil Microbial Carbon and Nitrogen Responses to Fire and Clipping in a Southern Mixed Grassland** by W. N. Harris, T. W. Boutton, and R. J. Ansley
- 588 **Mesquite, Tobosagrass, and Common Broomweed Responses to Fire Season and Intensity** by R. J. Ansley, W. E. Pinchak, and D. L. Jones
- 598 **Postfire Recovery of Sagebrush Communities: Assessment Using SPOT-5 and Very Large-Scale Aerial Imagery** by Temuulen Tsagaan Sankey, Corey Moffet, and Keith Weber
- 605 **Design and Analysis of Rangeland Experiments Along Continuous Gradients** by Nicola Koper, Darcy C. Henderson, John F. Wilmschurst, Patrick J. Fargey, and Robert A. Sissons
- 614 **Point Sampling to Stratify Biomass Variability in Sagebrush Steppe Vegetation** by Patrick E. Clark, Stuart P. Hardegree, Corey A. Moffet, and Fredrick B. Pierson
- 623 **Comparison of Medusahead-Invaded and Noninvaded Wyoming Big Sagebrush Steppe in Southeastern Oregon** by Kirk W. Davies and Tony J. Svejcar
- 630 **Native Plant Growth and Seedling Establishment in Soils Influenced by *Bromus tectorum*** by Helen I. Rowe and Cynthia S. Brown
- 640 **Rough Agave Flowers as a Potential Feed Resource for Growing Goats** by Miguel Mellado, Jose E. Garcia, and Wolfgang Pittroff
- 647 **Evaluating Livestock Grazing Use With Streambank Alteration Protocols: Challenges and Solutions** by Jeremiah D. Heitke, Richard C. Henderson, Brett B. Roper, and Eric K. Archer

#### Research Notes

- 656 **Cattle Grazing Distribution and Efficacy of Strategic Mineral Mix Placement in Tropical Brazilian Pastures** by Ricardo C. D. Goulart, Moucyr Corsi, Derek W. Bailey, and Silvio S. Zocchi
- 661 **Growth of Chickasaw Plum in Oklahoma** by Stacy W. Dunkin, Fred S. Guthery, and Rodney E. Will
- 666 **Volume 61 Table of Contents and Index**

# Rangeland Ecology & Management

## Index

### Volume 61, 2008

#### A

Abaye, A. O., 245  
*Abies*, 218  
*Acacia sieberiana*, 182  
*Achnatherum thurberianum*, 188  
 Age and Body Condition of Goats Influence  
   Consumption of Juniper and Monoterpene-Treated  
   Feed, 48  
 Agroforestry, 275  
 Alcoze, Thom M., 485  
 Aleper, Daniel, 182  
 Allcock, Kimberly G., 475  
 Allen, Elizabeth A., 63  
 Allowable use standards, 647  
 Alternative stable states, 359  
 Anderson  
   Gerald L., 437  
   V. J., 430  
 Angell, Raymond, 465  
 Annual  
   grass(es), 110, 211, 623  
   monitoring indicators, 647  
 Ansley, R. James (Jim), 496, 561, 580, 588  
 Arbuscular mycorrhizal fungi, 630  
 Archer, Eric K., 647  
*Arctostaphylos*, 98  
 Ares, Jorge O., 38  
 Arid shrublands, 38  
*Artemisia tridentata*, 63, 623  
   Nuttall, 249  
   subsp. *nevadensis*, 263  
 Ash, A. J., 3  
 Assessment of Juniper Encroachment With the Use of  
   Satellite Imagery and Geospatial Data, 412  
*Astragalus filipes*, 444  
*Athene cunicularia*, 543  
*Atriplex canescens*, 124  
 Auen, Lisa M., 204

#### B

BACI, 605  
 Bailey, Derek W., 26, 131, 656  
 Barnes, Matthew K., 380  
 Barnett, Jenny K., 535  
 Barrow, J. R., 124  
 Bartolomé, Jordi, 218  
 Bartos, D. L., 93  
 Bates, Jonathan D., 188  
 Beeskov, Ana M., 194  
 Behavior, 656  
 Bender, Louis C., 554  
 Benson, Brock, 263  
 Bergman, David L., 321  
 Berns, Hannah F., 204  
 Bertiller, Mónica B., 38  
 Bestelmeyer, B. T., 359  
 Bhattacharai, Kishor, 444  
 Big sagebrush, 249

Bingham, Brett S., 211  
 Biological control, 314, 529  
 Biomass, 580  
   production, 204  
 Birth defects, 240  
 Black Rubio, Christina M., 394  
 Blanco, Paula D., 194  
 Blank, Robert R., 169, 475  
 Bleich, Vernon C., 571  
 Blood metabolites, 640  
 Blowouts, 194  
 Blue Oak Ranch Reserve, 294  
 Boada, Martí, 218  
 Bobwhite quail, 561  
 Bouchard, Patrice, 543  
*Bouteloua eriopoda*, 124  
 Boutton, T. W., 580  
 Bowns, J. E., 93  
 Boyd, Chad S., 389  
 Boykin, Kenneth G., 394  
 Bradford, Jim, 465  
 Breck, Stuart W., 321  
 Brewer, Tracy K., 18  
 Briske, David D., 2, 3, 359  
 Broad-Scale Assessment of Rangeland Health, Grand  
   Staircase-Escalante National Monument, USA, 249  
*Bromus tectorum*, 63, 475  
 Brown  
   Cynthia S., 630  
   J. R., 3  
 Browsing, 182  
 Brunson, Mark W., 137  
 Brush  
   control, 269  
   management, 561  
 Bunchgrass, 188, 389  
 Burn season, 509, 588

#### C

<sup>13</sup>C natural abundance, 275  
 C<sub>3</sub>, 580  
 C<sub>4</sub>, 580  
 Caatinga, 275  
 Calcium, 535  
 California, 571  
 Call, Christopher A., 263  
 Camera stand, 245  
 Canopy, 93  
 Carbon flux, 465  
 Carbon Fluxes on North American Rangelands, 465  
 Cattle, 226, 554  
   diets, 240  
   grazing, 605  
 Cattle Grazing Distribution and Efficacy of Strategic  
   Mineral Mix Placement in Tropical Brazilian Pas-  
   tures, 656  
*Ceanothus*, 98  
*Centaurea*, 18  
   solstitialis, 314

*Centrocercus urophasianus*, 535  
*Cervus elaphus*, 302  
*Ceutorhynchus litura*, 529  
 Chambers, Jeanne C., 169, 475  
 Change detection, 412  
 Channels, 521  
 Chaparral, 571  
 Cheatgrass, 116, 430, 630  
 Cibils, Andrés F., 394  
 Clark, Patrick E., 339, 614  
 Classification  
   accuracy, 598  
   tree, 294  
 Classification of Digital Photography for Measuring  
   Productive Ground Cover, 245  
 Clipping, 116  
 Clonal shrubs, 661  
*Colinus virginianus*, 561  
 Collier, Timothy R., 529  
*Collinsia parviflora*, 63  
 Colonization, 218  
 Combined Impacts of Native Grass Competition and  
   Introduced Weevil Herbivory on Canada Thistle  
   (*Cirsium arvense*), 529  
 Common Broomweed Growth Characteristics in  
   Cleared and Woody Landscapes, 561  
 Compaction, 566  
 Comparison of Medusahead-Invaded and Noninvaded  
   Wyoming Big Sagebrush Steppe in Southeastern  
   Oregon, 623  
 Competition, 496  
 Conifer Dispersion on Subalpine Pastures in  
   Northeastern Spain: Characteristics and Implications  
   for Rangeland Management, 218  
 Connors, Kevin J., 444  
 Containment, 110  
 Continuous grazing, 3  
 Cook, Robert W., 566  
 Corsi, Moacyr, 656  
 Cover, 580  
 Crawford, John A., 535  
 Crested Wheatgrass Defoliation Intensity and Season on  
   Medusahead Invasion, 211  
 Crown closure, 294  
 Crude protein, 232, 535

#### D

Davies, Kirk W., 110, 188, 623  
 Deferred rotation grazing, 380  
 Defoliation Effects on *Bromus tectorum* Seed Produc-  
   tion: Implications for Grazing, 116  
 del Valle, Héctor F., 194  
 Demographics, 137  
 Derner, J. D., 3  
 Desertification, 156  
 Design and Analysis of Rangeland Experiments Along  
   Continuous Gradients, 605  
 Dhuyvetter, Kevin C., 204  
 Dickson, Brett G., 284

Diet, 554  
 selection, 240, 394  
 Digestibility, 405, 640  
 Digestible organic matter, 232  
 Digital aerial photography, 245  
 Direct Approach for Quantifying Stream Shading, A.  
 339  
 Distance traveled, 226  
 Distribution, 26, 131  
 Disturbance, 188, 580  
 Diversity, 623  
 Dixie National Forest, 93  
 Does Doramectin Use on Cattle Indirectly Affect the  
 Endangered Burrowing Owl?, 543  
 Doescher, Paul S., 475  
 Domestic herbivores, 3  
 Doppler radar, 346  
 Dowhower, Steven L., 496  
 Down woody material, 485  
 Downy brome, 430  
 Drought, 269, 496  
 Dueterhaus, J. L., 329  
 Dugas, William, 465  
 Duke, S. E., 124  
 Dunkin, Stacy W., 661  
 Dynamic regimes, 359

## E

Ecological  
 resilience, 359  
 restoration, 485  
 site description, 263  
 sites, 249  
 Economic risk, 204  
 Ecosystem  
 management, 55, 249  
 services, 137  
 Effect of Conifer Encroachment Into Aspen Stands on  
 Understory Biomass, 93  
 Effect of Pinyon-Juniper Tree Cover on the Soil Seed  
 Bank, 63  
 Effects of Experience and Lactation on Lupine  
 Consumption by Cattle, 240  
 Effects of Nitrogen Availability and Cheatgrass  
 Competition on the Establishment of Vavilov  
 Siberian Wheatgrass, 475  
 Effects of Slash on Herbaceous Communities in  
 Pinyon-Juniper Woodlands of Northern Arizona, 485  
 Effect of Targeted Grazing and Biological Control on  
 Yellow Starthistle (*Centaurea solstitialis*) in Canyon  
 Grasslands of Idaho, The, 314  
*Elymus spicatus*, 263  
 Emmerich, William, 465  
 Endangered species, 543  
 Endecott, Rachel L., 394  
 Engle, David M., 55  
 Enhancing Native Grass Productivity by Cocultivating  
 With Endophyte-Laden Calli, 124  
 Equilibrium, 55  
*Equus asinus*, 232  
 Erosion, 74, 521  
 Evaluating Livestock Grazing Use With Streambank  
 Alteration Protocols: Challenges and Solutions, 647  
 Evaluation of Low-Stress Herding and Supplementation  
 Placement for Managing Cattle Grazing in Riparian  
 and Upland Areas, 26  
 Evaluation of NEXRAD Radar Precipitation Products  
 for Natural Resource Applications, 346

Evaporation, 329  
 Exotic  
 annual grasses, 98  
 species  
 abundance, 284  
 richness, 284  
 Exotic Plant Species Diversity: Influence of Roads and  
 Prescribed Fire in Arizona Ponderosa Pine Forests,  
 284  
 Exurban development, 137

## F

Factors Affecting *Bromus tectorum* Seed Bank  
 Carryover in Western Utah, 430  
 Faecal residues, 543  
 Fargey, Patrick J., 605  
 Faecal, 566  
 Feed  
 conversion, 640  
 ratio, 405  
 intake, 405, 640  
 Fehmi, Jeffrey S., 368  
 Fernandez-Gimenez, Maria, 148  
 Ferrero-Serrano, Angel, 529  
 Field technique, 339  
 Fire, 188, 263, 571  
 ecology, 509  
 intensity, 182  
 scar, 294  
 temperature, 588  
 Fire History in a Chaparral Ecosystem: Implications for  
 Conservation of a Native Ungulate, 571  
 Fishlake National Forest, 93  
 Floate, Kevin D., 543  
 Forage(ing), 93  
 behavior, 321  
 selection, 389  
 Forb(s), 535, 614  
 Fowler, James F., 284  
 France, Kevin A., 389  
 Frank, Albert B., 465  
 Frasier, G. W., 521  
 Free-grazing, 232  
 Frost, Rachel A., 48  
 Fry, Danny L., 294  
 Fuels Reduction in a Western Coniferous Forest: Effects  
 on Quantity and Quality of Forage for Elk, 302  
 Fuhlendorf, Samuel D., 3, 55  
 Fule, Peter Z., 485  
 Future of REM: Perspectives of the Incoming Editor-in-  
 Chief, The, 2

## G

Ganskopp, Dave (Dave) C., 226, 389  
 Garcia, Jose E., 640  
 Gardner, Dale R., 444  
 Gay, Clive C., 240  
 Geographic Information Systems (GIS), 412, 598  
 Germino, Matthew J., 412  
 Gerrard, Shannon A., 496  
 Gillen, R. L., 3  
 Gilmanov, Tagir, 465  
 Godfrey, E. B., 93  
 Goulart, Ricardo C. D., 656  
 GPS  
 collars, 226

monitoring, 394  
 GPS Collar Sampling Frequency: Effects on Measures  
 of Resource Use, 226  
 Grasses, 614  
 Grassland(s), 55, 419, 465, 521  
 vegetation, 509  
 Grazed ecosystems, 3  
 Grazing, 55, 116, 156, 245, 263, 269, 412  
 behavior, 26, 38, 226, 389  
 management, 3, 211  
 management systems, 380  
 systems, 3, 204  
 tactics, 38  
 Grazing Impacts in Vegetated Dune Fields: Predictions  
 From Spatial Pattern Analysis, 194  
 Grazing Systems for Yearling Cattle on Tallgrass  
 Prairie, 204  
 Green, Shane, 263  
 Gregg, Michael A., 535  
 Ground nesting birds, 389  
 Group size, 321  
 Growing-season fire, 509  
 Growth models, 661  
 Growth of Chickasaw Plum in Oklahoma, 661  
 Guthery, Fred S., 661

## H

Habitat, 571  
 selection, 394  
 Haferkamp, Marshall, 465  
 Ham, J. M., 329  
 Hardegree, Stuart P., 339, 346, 614  
 Harris, W. N., 580  
 Hartmann, F. Steve, 566  
 Havstad, K. M., 3  
 Heitke, Jeremiah D., 647  
 Hempy-Mayer, Kara, 116  
 Henderson,  
 Darcy C., 605  
 Richard C., 647  
 Herbicides, 269  
 Herbivore, 321  
 Herbivory, 156  
 Herding, 26  
*Hesperostipa comata*, 529  
 Heterogeneity, 55  
 Hild, Ann L., 529  
 Holecck, Jerry, 269  
 Holl, Stephen A., 571  
 Holroyd, Geoff, 543  
 Hosten, Paul E., 98  
 Howery, Larry D., 321  
 Huffman, David W., 485  
 Huntsinger, Lynn, 137  
 Hydrology, 329

## I

Image  
 analysis, 339  
 classification, 245  
 In vitro dry-matter digestibility, 302  
 Indigenous trees, 275  
 Infiltration, Runoff, and Sediment Yield in Response to  
 Western Juniper Encroachment in Southern Oregon,  
 74  
 Innovation, 137

Intake, 48, 566

Intake of Water Containing Condensed Tannin by Cattle and Sheep, 354

Integrated

pest management (IPM), 529  
weed management, 314

Intensive

early stocking, 204  
rotational grazing, 380

Intentional introduction, 284

Interannual Herbaceous Biomass Response to Increasing Honey Mesquite Cover on Two Soils, 496

Intercanopy, 74

Intermountain Presettlement Juniper: Distribution, Abundance, and Influence on Postsettlement Expansion, 82

Interspace/Undercanopy Foraging Patterns of Beef Cattle in Sagebrush Habitats, 389

Invasion of Broom Snakeweed (*Gutierrezia sarothrae*) Following Disturbance: Evaluating Change in a State-and-Transition Model, 263

Invasion(s), 475, 630

Invasive

plants, 110, 623  
plant management, 110  
species, 211

Invertebrate Community Response to a Shifting Mosaic of Habitat, 55

Islands of fertility, 275

Isotopes, 188

## J

Jaguars, 554

Jaguar and Puma Predation on Cattle Calves in Northeastern Sonora, Mexico, 554

Jensen, Delyn, 26, 131

Johnson

Dale W., 169  
Douglas A., 444, 465  
Douglas E., 339  
Dustin D., 82, 226  
Heather E., 571

Jones

D. L., 588  
Thomas A., 444

*Juniperus*, 48

*occidentalis*, 74

## K

Kemp, Ken E., 509

Khumalo, Godfrey, 269

Kidane, Negusse F., 232

Kie, John G., 302

Kirby, Donald R., 437

Kluever, Bryan M., 321

Knapp, Corrine Noel, 148

Knowing the Land: A Review of Local Knowledge Revealed in Ranch Memoirs, 148

Koler, Selina A., 521

Konde, Lora, 571

Kott, Rodney W., 18

Krausman, Paul R., 321, 571

Kreuter, Urs P., 456

Kronberg, Scott L., 354

## L

Lactation status, 321

Land use, 218

Landowner

associations, 456  
attitudes, 456

Landsat Thematic Mapper, 412

Landscape ecology, 55

Launchbaugh, Karen L., 48, 314

Leafy Spurge Suppression by Flea Beetles in the Little Missouri Drainage Basin, USA, 437

Lee, Stephen T., 240

Leslie, David M., Jr., 55

Levinson, David H., 346

Livestock, 116, 354  
distribution, 380

Local knowledge, 148

Long, Ryan A., 302

Long-Term Effects on a Summer Fire on Desert Grassland Plant Demographics in New Mexico, 156

Long-term experimentation, 368

Long-Term Response Patterns of Tallgrass Prairie to Frequent Summer Burning, 509

Low sagebrush, 82

Low-moisture blocks, 131

*Loxodonta africana*, 182

Lucero, M. E., 124

*Lupinus*, 240

Lye, Kåre A., 182

## M

Maeno, Motoko, 380

Malechek, John C., 93, 380

Mashiri, Fadzayi E., 368

Mastication, 98

Mayeux, Herman, 465

Mazzola, Monica B., 475

McClaran, Mitchel P., 368

Mealor, Brian A., 529

Measurement, 339

Mediterranean mountains, 218

Medusahead Dispersal and Establishment in Sagebrush Steppe Plant Communities, 110

Mellado, Miguel, 405, 640

Mesquite, 561

Mesquite, Tobosagrass, and Common Broomweed Responses to Fire Season and Intensity, 588

Meteorology, 346

Method of Supplementation May Affect Cattle Grazing Patterns, 131

Mexico, 554

Meyer, Susan E., 430

Microchannels Affect Runoff and Sediment Yield From a Shortgrass Prairie, 521

Mielnick, Pat, 465

Miller

Mark E., 249

Richard F., 82

Mixed-grass prairies, 605

Moe, Stein R., 182

Moffet, Corey A., 598, 614

Molinari, Francisco, 269

Monitoring, 339

Montana, 18

Morgan, Jack, 465

Mortality, 182, 554

Mosley, Jeffrey C., 18

Motteram, Ernie S., 240

Mountain

big sagebrush, 82, 598  
sheep, 571

Muir, Patricia S., 98

Murphy, J. T., 329

## N

Native Plant Growth and Seedling Establishment in Soils Influenced by *Bromus tectorum*, 630

Native

plant restoration, 116  
species, 630

Near infrared reflectance spectroscopy, 232

Net returns, 204

Nicola Koper, Nicola, 605

Nitrate, 475

Nitrogen, 302

Nondestructive sampling, 614

Nontarget, 543

Norland, Jack E., 437

Norton, Brien E., 380

Nowak, Robert S., 63, 475

Nutrition, 48, 302

## O

Observer

error, 419  
variability, 647

Old-growth, 82

Olson, Bret E., 18

Oregon, 302

Organic Matter Turnover in Light Fraction and Whole Soil Under Silvopastoral Land Use in Semiarid Northeast Brazil, 275

Osuna, P., 124

*Ovis*

*aries*, 18  
*canadensis*, 571

Owens, M. Keith, 1

Owensby, Clenton E., 204, 329

## P

Paddock Size and Stocking Density Affect Spatial Heterogeneity of Grazing, 380

Panther, Kip E., 240

Parmenter, Robert R., 156

Pasture, 245, 275

Patagonia, 194

Patch

dynamics, 55  
selection, 38

Percentage of cover, 302

Perceptions of Texas Landowners Regarding Fire and Its Use, 456

Perchemlides, Keith A., 98

Petersen

Mark K., 394  
Steven L., 74

Pfister, James A., 240

Phillips, R. D., 245

Phosphorus, 535

Physiological and Morphological Characterization of Basalt Milkvetch (*Astragalus filipes*): Basis for Plant Improvement, 444

Physiology, 188

- Pierson, Fredrick B., 614  
Pinchak, William E., 496, 588  
Piñon-Juniper Woodland Use by Cattle in Relation to Weather and Animal Reproductive State, 394  
*Pinus*, 218  
Pinyon-juniper woodlands, 485  
Pittroff, Wolfgang, 405, 640  
Plaixats, Josefina, 218  
Plant  
  canopy cover, 419  
  cover and density, 368  
  nutrition, 169  
Plant-animal interaction, 55  
Plant Community and Soil Microbial Carbon and Nitrogen Responses to Fire and Clipping in a Southern Mixed Grassland, 580  
Plantation, 218  
*Poa secunda*, 63  
Point-frequency method, 419  
Point Sampling to Stratify Biomass Variability in Sagebrush Steppe Vegetation, 614  
Poisonous plant(s), 240, 263  
Pollution reduction, 354  
Ponderosa pine, 284  
*Populus tremuloides*, 93  
Postfire Recovery of Sagebrush Communities: Assessment Using SPOT-5 and Very Large-Scale Aerial Imagery, 598  
Poulin, Ray, 543  
Power analysis, 605  
Prairie grass, 245  
Precipitation, 346  
  variability, 496  
Precision, Repeatability, and Efficiency of Two Canopy-Cover Estimate Methods in Northern Great Plains Vegetation, 419  
Predation, 554  
Predators, 321  
Predicting Diet Quality of Donkeys via Fecal-NIRS Calibrations, 232  
Prescribed fire, 156, 169, 284, 302, 456  
Prescribed Fire Effects on Deciduous Oak Woodland Stand Structure, Northern Diablo Range, California, 294  
Prescribed Fire, Soil, and Plants: Burn Effects and Interactions in the Central Great Basin, 169  
Prescribed livestock grazing, 18  
Prescribed Sheep Grazing to Suppress Spotted Knapweed on Foothill Rangeland, 18  
Prevention, 110  
Production, 623  
*Prosopis*, 566  
  *glandulosa*, 496, 561  
*Prunus angustifolia* Marsh., 661  
Pumas, 554  
Pyke, David A., 116
- Q**
- Quebracho tannin, 354  
*Quercus*, 294
- R**
- Rachlow, Janet L., 302  
Rainfall simulation, 74, 521  
Ralphs, Michael H., 263  
Ranch memoirs, 148  
Ranching as a Conservation Strategy: Can Old Ranchers Save the New West?, 137  
Range cake, 131  
Range restoration, 156  
Rangeland(s), 55, 148, 269, 456  
  condition, 249  
  management, 3  
  monitoring, 359  
  restoration, 475  
Ransom, Jr., Dean, 561  
Rau, Benjamin M., 169  
Rayburn, E. B., 245  
Recommendations for Development of Resilience-Based State-and-Transition Models, 359  
Reeder, J. D., 521  
Relative cost, 614  
Remote sensing, 412, 598  
Reproduction, 535  
Response of *Acacia sieberiana* to Repeated Experimental Burning, 182  
Responses of Chaparral and Oak Woodland Plant Communities to Fuel-Reduction Thinning in Southwestern Oregon, 98  
Response of Thurber's Needlegrass to Fall Prescribed Burning, The, 188  
Resprout, 294  
Restoration, 444, 571  
Revegetation, 444  
Reyes, I., 124  
Rills, 521  
Ring statistic, 194  
Riparian, 339  
  areas, 26  
  grazing, 647  
Rocky Mountain National Park, 630  
Roeder, Brent L., 18  
Roper  
  Aaron, 55  
  Brett B., 647  
Rosas-Rosas, Octavio C., 554  
Rostagno, César M., 194  
Rotational Grazing on Rangelands: Reconciliation of Perception and Experimental Evidence, 3  
Rotz, J. D., 245  
Rough agave, 640  
Rough Agave Flowers as a Potential Feed Resource for Growing Goats, 640  
Rowe, Helen I., 630  
Runoff, 329
- S**
- Saab, Victoria, 284  
Safe site, 485  
Sagebrush steppe, 444, 475  
Sage-grouse, 389  
Salas, Gabriela, 405  
Saliendra, Nicanor Z., 465  
Salt, 656  
Sampling interval, 226  
Samuel, Luke W., 437  
Sánchez, Sônia, 218  
Sankey, Temuulen Tsagaan, 412, 598  
Santa Rita Experimental Range, 368  
Sauri, David, 218  
Savanna, 496, 588  
Scaglia, G., 245  
Schuman, Gerald E., 465  
Schupp, Eugene W., 475  
Scott, Cody B., 566  
Seasonal rotation grazing, 368  
Season-long stocking, 204  
Secondary dormancy, 430  
Sediment, 74  
Seed  
  density, 63  
  rain, 430  
Seed-bank diversity, 63  
Seeding, 284  
  emergence, 430  
Seepage, 329  
Semiarid, 430  
  grassland, 368  
Sequestration, 465  
Serum, 566  
  urea, 405  
Shaver, P. L., 359  
Sheep Spatial Grazing Strategies at the Arid Patagonian Monte, Argentina, 38  
Sheley, Roger L., 211  
Short- and Long-Term Vegetation Change Related to Grazing Systems, Precipitation, and Mesquite Cover, 368  
Short duration grazing, 380  
Short-Term Mesquite Pod Consumption by Goats Does Not Induce Toxicity, 566  
Shrub(s), 614  
  canopy cover, 598  
  expansion, 661  
  invasion, 156  
  steppe, 465  
Sieg, Carolyn Hull, 284  
Sims, Phillip L., 465  
Sissons, Robert A., 605  
Slash mulch, 485  
Smith  
  Duane C., 430  
  Thomas, 529  
Snyder, Kereith, 465  
Soil  
  erosion, 194  
  nutrients, 169  
  properties, 249  
Soil Depth and Climatic Effects of Desert Vegetation Dynamics, 269  
Solar radiation, 339  
Sonora, 554  
Spatial  
  analysis, 194  
  pattern, 412  
Species composition, 496  
Spectral mixture analysis, 598  
*Sphaeralcea angustifolia* as a Substitute for Alfalfa for Growing Goats, 405  
*Sporobolus*  
  *airoides*, 124, 529  
  *cryptandrus*, 124  
Stam, B. R., 93  
Stanford, Roy L., 561  
State of REM: Perspectives of the Outgoing Editor-in-Chief, The, 1  
Steady-state infiltration, 74  
Steer gains, 204  
Stoddard, Michael T., 485  
Stream temperature, 339  
Stringham, Tamzen K., 74, 359  
Stuth, Jerry W., 232  
Succession, 82

Sucrose addition, 475  
 Summer fire, 588  
 Supplement, 656  
   blocks, 26  
 Surface hydrology, 521  
 Sustainability, 148  
 Svejcar, Tony J., 211, 623  
 Symstad, Amy J., 419  
 Synergism, 529

## T

*Taeniatherum caput-medusae*, 110, 623  
 Tall fescue, 245  
 Tallgrass prairie, 204, 329  
 Targeted  
   grazing, 314  
   livestock grazing, 18  
 Taylor  
   Charles A., 456  
   Charles A., Jr., 48  
 Teague, W. Richard, 3, 456, 496  
 Temporal Variation in Diet and Nutrition of  
   Preincubating Greater Sage-Grouse, 535  
 Terpenoids, 48  
 Thacker, Eric T., 263  
 Thermal stress, 394  
 Thomas, Milt, 269  
 Thorstenson, Andy D., 419  
 Thresholds, 359  
 Thrift, Brian D., 18  
 Tiessen, Holm, 275  
 Time control grazing, 380  
 Tolleson, Douglas R., 232  
 Tony Svejcar, Tony, 465  
 Torres, Steven G., 571  
 Towne, E. Gene, 509

Training, 647  
 Tree mortality, 294  
 Trlica, M. J., 521

## U

Understory production, 485  
 Ungulate, 321  
 Utilization, 131

## V

Valdez, Raul, 554  
 Van Vactor, Steven S., 346  
 VanWagoner, Harv C., 26  
 Vavra, Martin, 302  
 Vegetation monitoring, 419  
 Vigilance in Cattle: The Influence of Predation, Social  
   Interactions, and Environmental Factors, 321  
 Visibility, 38  
 Visual estimates, 419  
 Volatile fatty acids, 640

## W

Waggoner, J. Alan, 496  
 Wallace, John M., 314  
 Water  
   consumption, 329  
   quality, 339  
 Water Balance of a Stock-Watering Pond in the Flint  
   Hills of Kansas, 329  
 Watershed management, 346  
 Weber, Keith, 598  
 Weeds, 18, 110, 623  
   control, 116

  prevention, 211  
 Weevil, 529  
 Weight gain, 405  
 Weinmeister, Robin, 26  
 Wellicome, Troy I., 543  
 Western  
   juniper, 82  
   United States, 444  
 Wick, Barbara, 275  
 Wiegand, Thorsten, 194  
 Wienk, Cody L., 419  
 Wildlife habitat, 661  
 Will, Rodney E., 661  
 Willms, W. D., 3  
 Wilms, John F., 605  
 Wilson, Linda M., 314  
 Winstral, Adam H., 346  
 Woodard, J. Brad, 456  
 Woodlands, 394  
   encroachment, 169  
 Woody  
   encroachment, 496  
   plant, 496  
   plant encroachment, 561, 588  
 Working landscapes, 137  
 WSR-88D, 346  
 Wynne, R. H., 245

## Y

Yearlong grazing, 368

## Z

Zocchi, Silvio S., 656



